Space Weather Forecast

Issued on Monday, 29 April 2024 at 13:14 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: A chance of further Moderate-class flares and slight chance of Strong flares through the period.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity returned to Moderate levels following renewed Moderate flare activity, peaking at 29/0111 UTC from the large region in the western disk. This region also produced several other upper common class flares during the period. There remain seven sunspot regions on the visible disc, six of which are currently numbered. The large region in the western disc continues to dominate the flare risk. This region continues to show further development in its intermediate portion in recent hours. Remaining sunspot regions are all relatively small and simple. A new spot region continues to emerge at the northeast limb and was numbered with another small region emerging in the northeast. Two small regions ceased to be visible as they moved towards the western limb.

No clearly Earth directed Coronal Mass Ejections (CMEs) were observed in available imagery although analysis ongoing for several faint events.

Solar Wind / Geomagnetic Activity: Solar winds have been variable within slightly elevated levels but on an overall mostly steady trend. The Interplanetary Magnetic Field was weak, with the important north-south component also weakly variable. Geomagnetic activity was mainly Quiet (Kp 0-2).

Energetic Particles / Solar Radiation: Solar radiation was at background levels.

Four-Day Space Weather Forecast Summary

Solar Activity: There is a chance of Moderate-class flares and a slight chance of Strong flares maintained though the period, this mainly from the largest and most magnetically complex sunspot group, which is currently in the west of the visible disc.

Solar Wind / Geomagnetic Activity: A coronal mass ejection (CME) which originated late on 26 Apr in the southeast of the disc, could give a glancing blow early on day 2 (30 Apr). Solar winds will likely continue at slightly elevated levels over the next couple of days, with further weak coronal hole influences possible. Later on day 3 into day 4 (1-2 May) a more definite coronal hole connection and faster stream of solar wind may arrive.

Geomagnetic activity is expected to be largely Quiet at first, but with Unsettled periods likely on days 3-4 (1-2 May) as a faster stream of solar wind perhaps arrives. There is also a slight chance of isolated Active to G1/Minor Storm intervals on day 2 (30 Apr), should the possible glancing CME mentioned above materialise.

Energetic Particles / Solar Radiation: Solar radiation is most likely to remain at background

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levels through this period. There is a slight chance for an S1 or greater event, with the large, complex sunspot in the western quadrant posing the main risk as it continues to rotate westwards.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	10	5	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	40	40	40	40
Very Active	R3 to R5 X	No	10	10	10	10

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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